Suggested Answers-"Ocean Watch" Article Discussion Questions

1. Discuss three purposes of monitoring coastal waters.
    a. Track changes in biology, chemistry and physics of the ocean
    b. Study impact of urban areas on coastal watershed
    c. Monitor water movement as it relates to the coastal ecosystem
    d. Impact of increased nutrients from farming on phytoplankton growth
    e. Determine what role coastal waters play in global warming
    f. Monitor overall health of coastal watershed
2. What nutrients and conditions mentioned in the article create optimal growth conditions for phytoplankton?
    a. Nitrogen and phosphorus
    b. Light
3. Using your knowledge of food webs, describe two positive and two negative contributions phytoplankton make to the environment.
    Positives:
    a. Essential to aquatic food webs - autotrophs
    b. Produce oxygen through photosynthesis
    c. Take up CO_2 that humans add to the atmosphere to help fight global warming
    Negatives
    d. If too many phytoplankton grow, they will eventually die off. When they do so, they can use up all of the oxygen in area as they decompose – this in turn can cause fish to die
    e. Too many phytoplankton can block the light from reaching the bottom so that other photosynthetic organisms, such as seagrass, can not grow
    f. Some phytoplankton can produce toxins
4. List 3 of the instruments used by WA-COOL and the importance of their specific measurements.
    a. Fluorometer – estimates the amount of phytoplankton in the water without actually counting them
    b. Nitrate sensor – measure the amount of nitrogen in the water, determining if nutrients are available for phytoplankton to grow
    c. ADCP – measure direction and speed of water, to determine how nutrients, phytoplankton and water itself are moving
5. Research phytoplankton further and write a brief defense in support of phytoplankton in ecosystems (You can always tell if something's important by the effects of taking it out of the environmental system)
    a. Answers will vary depending on the resources available. The intention overall is students will grasp the importance of phytoplankton as a major part of the biogeochemical cycles and as autotrophs, the basis for aquatic food webs and with links to global warming.